

WHAT WE CLAIM IS:

sub A1 1. A narrow-band excimer laser apparatus comprising a bandwidth-narrowing optical system,

5 said bandwidth-narrowing optical system including a Littrow mounting reflection type diffraction grating and a combination of a beam diameter-enlarging optical system S and a slit placed on an entrance side of said reflection type diffraction grating,

10 wherein diffracted wavefront distortion (a measured value for He-Ne laser light) within a laser irradiation area of said reflection type diffraction grating in Littrow mounting is not more than $\lambda/10$, where λ is a measuring wavelength.

15 2. A narrow-band excimer laser apparatus comprising a bandwidth-narrowing optical system,

20 said bandwidth-narrowing optical system including a Littrow mounting reflection type diffraction grating and a combination of a beam diameter-enlarging optical system S and a slit placed on an entrance side of said reflection type diffraction grating,

25 wherein light-blocking means is placed between said reflection type diffraction grating and said slit to prevent laser light from being applied to a portion of a laser irradiation area of said reflection type diffraction grating at which diffracted wavefront distortion (a measured value for He-Ne laser light) in Littrow mounting is more than $\lambda/10$, where λ is a measuring wavelength.

3. A narrow-band excimer laser apparatus according

to claim 1 or 2, wherein the number of grooves of said reflection type diffraction grating is in a range of from 80 to 150 per millimeter.

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A2 4. A narrow-band excimer laser apparatus according
5 to any one of claims 1 to 3, wherein a blaze angle of said reflection type diffraction grating is not less than 76°.

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A3